

# इंटरनेट

# मानक

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Mazdoor Kisan Shakti Sangathan

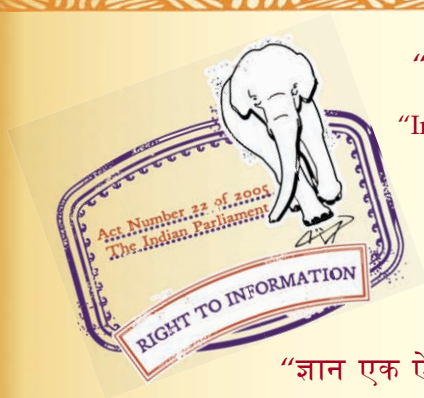
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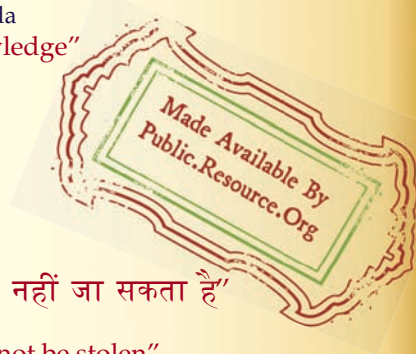
IS 12538 (1989): Small Tools - Shank Type Gear Shaper  
Cutter [PGD 32: Cutting tools]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*

**SMALL TOOLS — SHANK TYPE GEAR  
SHAPER CUTTER — SPECIFICATION**

**भारतीय मानक**

**ग्रोजार — शैंक टाईप के गियर आकृतिकार कर्तक — विनिर्दिष्ट**

UDC 621.914.2 : 621.833

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards on 13 February 1989, after the draft finalized by the Small Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

In the preparation of this standard, considerable assistance has been derived from DIN 1828 : 1977 'Pinion-type cutters for cylindrical gears shanks gear cutters for spur gears', issued by the Deutsches Institut für Normung ( DIN ) and the values of module 4 and 5 have been taken from Tool Catalogue of Larenz, West Germany.

# Indian Standard

## SMALL TOOLS — SHANK TYPE GEAR SHAPER CUTTER — SPECIFICATION

### 1 SCOPE

**1.1** This standard covers the dimensions and other requirements of shank type gear shaper cutters suitable for module 1 to 3, conforming to IS 2535 : 1978 'Basic rack and modules of cylindrical gears for general engineering and heavy engineering (second revision)'.

### 2 REFERENCES

IS No.	Title
IS 2102 (Part 1) : 1980	General tolerances for dimensions and form and position: Part 1 General tolerances for linear and angular dimensions (second revision)
IS 7291 : 1981	Specification for high speed tool steel (first revision)
IS 7778 : 1975	Methods for sampling small tools
IS 8731 : 1978	Technical supply conditions for general purpose gear hobs

### 3 DIMENSIONS

**3.1** Dimensions of shank taper gear shaper cutters shall be as given in Table 1.

**3.1.1** Dimensions of stub morse taper for shank for shaper cutter shall be as given in Table 2.

#### 3.2 Tolerances

**3.2.1** Class of accuracy and tolerance for cutters shall be according to 'Indian Standard Gear shaper cutter — Class of accuracy and tolerance (under preparation)'.

NOTE — Till such time the standard under preparation is published, the requirement shall be as agreed to between the purchaser and the supplier.

**3.2.2** For dimensions where tolerance has not been specified, tolerance of medium series of IS 2102 (Part 1) : 1980 shall apply.

### 4 MATERIAL

**4.1** Gear shaper cutter shall be of high speed tool steel of designation XT 91 W6CoMo5 Cr4V2 according to IS 7291 : 1981 or equivalent as agreed to between the manufacturer and the user.

### 5 HARDNESS

**5.1** Depending upon the choice of the high speed steel, hardness shall be between 820 to 900 HV measured on a flat surface.

### 6 GENERAL REQUIREMENTS

**6.1** All sharp corners except the cutting edges shall be removed.

**6.2** Profile of gear shaper cutters shall be according to 'Indian Standard Reference profiles for gear cutting tools for involute teeth according to IS 2535 : 1978 (under preparation)'.

NOTE — Till such time the Indian Standard on profile of gear shaper cutters is published, IS 8731 : 1978 shall be referred.

**6.3** For requirements not covered under this standard, reference shall be made to 'Indian Standard for Gear shaper/cutter — Technical supply conditions (under preparation)'.

NOTE — Till such time the standard under preparation is published, the requirement shall be as agreed to between the purchaser and the supplier.

### 7 PROTECTIVE COATING

**7.1** Each gear shaper cutter shall be covered by a suitable rust proofing material and then wrapped in non-absorbent paper.

### 8 SAMPLING

**8.1** The sampling and criteria of acceptance shall be in accordance with IS 7778 : 1975.

### 9 DESIGNATION

**9.1** A shank type spur gear cutter with Stub morse taper 2 SMT-2, module 2.0 mm, 10 teeth and accuracy class 'A' and reference profile RPI shall be designated as:

Shank Type Gear Shaper Cutter SMT-2 — 2×10×A-RPI IS 12538 : 1989.

### 10 MARKING

**10.1** Gear shaper cutters shall be marked with the following information:

- a) Designation,
- b) Name of manufacturer or trade-mark,

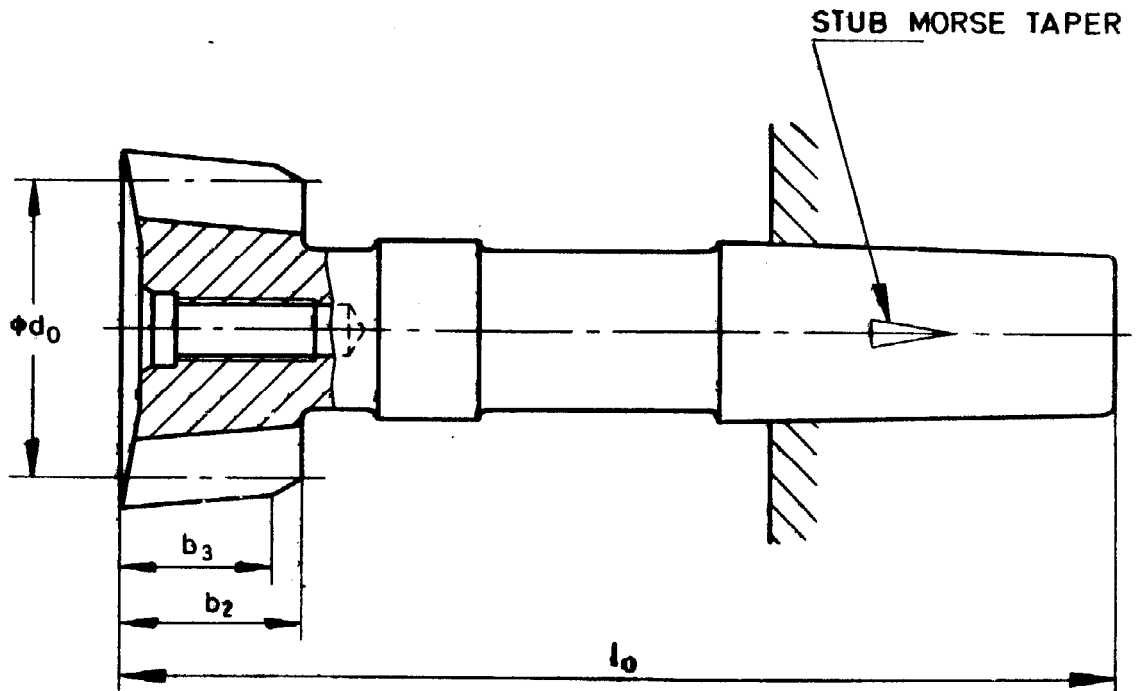
- c) Module,
- d) Pressure angle,
- e) Number of teeth,
- f) Reference profile, and
- g) Working depth.

## 11 PACKING AND PACKAGING

11.1 Each gear shaper cutter or a number of gear shaper cutters of the same type shall be packed in a carton bearing the size, number, designation and manufacturer's name and/or trade-mark.

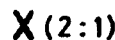
**Table 1 Basic Dimensions of Shank Type Gear Shaper Cutter**  
( Clause 3.1 )

All dimensions in millimetres.



<i>m</i>	<i>z</i> <sub>0</sub>	<i>d</i> <sub>0</sub>	<i>b</i> <sub>3</sub> <i>Min</i>	<i>b</i> <sub>2</sub> <i>Min</i>	<i>l</i> <sub>0</sub>	No. of Teeth	Stub Morse Taper No.
1	16	16	12	10	95	24	SMT-2
	24	24			120	36	
1.25	10	12.5	12	10	95	20	SMT-2
	16	20			120	30	
1.5	10	15	15	12	95	20	SMT-2
	16	24			120	32	
1.75	10	17.5	15	12	95	22	SMT-2
	16	28			120	34	SMT-4
2	10	20	17	14	95	22	SMT-2
	16	32			150	36	SMT-4
2.5	10	25	18	15	95	24	SMT-2
	16	40			150	38	SMT-4
3	10	30	18	15	95	26	SMT-2
	16	48	19	16	150	36	SMT-4
4	12	48	25	18	150	28	SMT-4
5	12	60	25	18	150	26	SMT-4

( Clause 3.1.1 )



All dimensions in millimetres.

Stub Morse Taper	Taper Ratio	$\frac{\alpha}{2}$	$\alpha$	$d_1$ K10	$d_2$ $\approx$	$d_3$ $\approx$	$d_4$ Max	$d_5$	$d_{10}$	$d_{11}$ Max	$d_{12}$ Max	$I_1$ Max	$I_2$ Max	$I_6$ Min	$I_7$	$I_8$	$r_3$
SMT-2	1:20.020 = 0.049 95	1° 25' 50"	5	17.780	18	16	—	M6	7.2	8	8.5	35	40	24	—	4	0.5
SMT-4	1:19.254 = 0.051 94	1° 29' 15"	6.5	31.267	31.6	27.6	27	M16	17	20	22	71	77.5	32	3	8	1



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